

**WASHINGTON DEPARTMENT OF ECOLOGY**  
**ENVIRONMENTAL ASSESSMENT PROGRAM**  
**FRESHWATER MONITORING UNIT**  
**STREAM DISCHARGE TECHNICAL NOTES**

**STATION ID:** 35K050  
**STATION NAME:** Alpowa Creek at Mouth  
**WATER YEAR:** 2010  
**AUTHOR:** Mitch Wallace

**Introduction**

Watershed Description

Alpowa Creek is a left bank tributary to the Snake River, approximately 6 miles downstream from Clarkston, Washington. The headwaters of Alpowa Creek are in the northern foothills of the Blue Mountains. From there, the creek flows northeasterly to its confluence with the Snake River.

Gage Location

The station is located on the right bank, between the Old Chief Timothy bridge and the Highway 12 bridge in the parking lot of the Department of Transportation Interpretive Site.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	128 (Streamstats)
Latitude (degrees, minutes, seconds)	46° 24' 44" N
Longitude (degrees, minutes, seconds)	117° 12' 48" W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	8.4
Median Annual Discharge (cfs)	8.7
Maximum Daily Mean Discharge (cfs)	16
Minimum Daily Mean Discharge (cfs)	3.3
Maximum Instantaneous Discharge (cfs)	39
Minimum Instantaneous Discharge (cfs)	2.2
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	11
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	4.9
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	4
Number of Un-Reported Days	21
Number of Days Qualified as Estimates	29
Number of Modeled Days	0

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

#### Table 2 Discussion (Discharge Statistics)

The unreported days were due to ice-impacted data and damage to the terminal end during a high flow event in early January.

Data is qualified as an estimate when the mean daily flow difference between corrected and uncorrected data is greater than 20%.

Peak flow occurred during a rain on snow event on January 5, 2010.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	5.5
Potential Weighted Rating Error (% of discharge)	8.3
Total Potential Error (% of discharge)	13.8

Table 3 Discussion (Error Analysis)

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Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	0.72
Maximum Recorded Stage (feet)	4.84
Range of Recorded Stage (feet)	4.12

Table 4 Discussion (Stage Record)

The maximum recorded stage occurred during the January 5, 2010, rain on snow event.
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Table 5. Rating Table Summary

Rating Table No.	18	19	20
Period of Ratings	10/1/09 to 1/5/10	1/5/10 to 9/30/10	9/1/10 to 9/30/10
Range of Ratings (cfs)	3.9 to 180	2.2 to 284	3.9 to 284
No. of Defining Measurements	4	9	3
Rating Error (%)	9.3	7.5	11.8

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

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Period of Ratings			
Range of Ratings (cfs)			
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Table 5 Discussion (Rating Tables)

Rating 19 was a result of the rain on snow event in early January. Rating 20 was a result of leaf litter build up at the control leading to channel fill.

Six discharge measurements were taken throughout the water year, ranging from 4.3 to 10.1 cfs.

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope Conveyance
Range of Modeled Stage (feet)	1.70 to 4.28
Range of Modeled Discharge (cfs)	35 to 284
Valid Period for Model	1/5/10 to 10/1/10
Model Confidence	2.4%

Table 6 Discussion (Modeled Data)

Manning's roughness coefficient is calculated using the Manning's 'n' Determination worksheet.
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Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
n/a	n/a

Table 7 Discussion (Surveys)

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Activities Completed

The staff gage and slant pipe were repaired after the high flow event in early January.
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